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ABSTRACT

As part of an effort to replace various types of computer equipment with a single advanced computer system, each of the 17 major air commands formed an Implementation/Conversion (I/C) Team to provide assistance to the approximately 200 Air Force bases involved. This report describes the education course used to prepare the I/C teams. The importance of the training is emphasized for reasons of motivation as well as the educational benefits. The report notes that the use of actual I/C team members as instructors contributed significantly to success of the course. (PH)

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BASE ENGINEER AUTOMATED MANAGEMENT SYSTEM (BEAMS): IMPLEMENTATION/CONVERSION TEAM EDUCATION

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TECHNICAL REPORT AFHRL-TR-69-21

OCTOBER 1969

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AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

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100 - January 1970 - CO455 - 105-2330

FOREWORD

As part of the Air Force Project INNOVATE, this study was initiated jointly by the Personnel and Training Requirements Branch, Training Research Division of the Air Force Human Resources Laboratory, in cooperation with the Civil Engineering School, Air Force Institute of Technology of the Air University. This part of Air Force Project INNOVATE (Project 686F) is concerned with the application of recent advances in the areas of training and education to professional education and particularly to the training of Civil Engineers in the new Base Engineer Automated Management Systems (BEAMS). This report is one of several prepared under Contract No. F33615-68-C-1076 during the period September 1967 and September 1969 by Technical Communications, Inc., (TCI), Los Angeles, California. Mr. Joel M. Kibbee was the principal investigator. While the primary responsibility of TCI, this development of BEAMS Implementation/Conversion Team Course represents a joint effort between various USAF and TCI personnel. This report was submitted by the authors in September 1969.

The authors thank all those individuals who made contributions. Mr. Melvin Snyder and Capt. Larry Sayre of the Training Research Division were the contract monitors, and Mr. Charles McLeod and his staff at the Air Force Data Systems Design Center assisted by keeping the I/C Course materials current with the latest changes in BEAMS.

This technical report has been reviewed and is approved.

GORDON A. ECKSTRAND, Ph. D.
Chief, Training Research Division
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ABSTRACT

This report describes the nature, purpose and method of development of the Base Engineer Automated Management System (BEAMS) Implementation Conversion (I/C) Team Education Course. It includes a short discussion of the content, history and development of BEAMS from its inception in 1964 to its initial test at Langley AFB in 1968. Implementation/Conversion is defined and described in terms of the responsibilities of major air commands and bases for the creation of the initial BEAMS data bank. The concept of the I/C teams is examined and the necessity for successful Implementation/Conversion is related to the success of the entire BEAMS program. I/C course content is contrasted with that of the regular BEAMS courses which were subsequently taught at AFIT, with special emphasis on the structure of course materials and teaching objectives.

SUMMARY

Base Engineer Automated Management System (BEAMS)

Implementation/Conversion Team Education

1. PROBLEM: The USAF Phase II Base Level Data Automation Standardization Program consists of the replacement of a variety of different brands and models of existing computer equipment with a single advanced computer system, the Burroughs B-3500, at base and major command levels throughout the Air Force. In addition to developing the system software, the Air Force is faced with the major task of implementing this system. Providing assistance to the approximately 200 bases to receive the B-3500 and the BEAMS was clearly beyond the capability of the USAF BEAMS taskforce. To meet this requirement for base assistance, the Phase II plan included the requirement for each of the seventeen major commands to form an Implementation/Conversion Team. Additionally, the Phase II plan levied the responsibility for the education and training of these teams onto the Civil Engineering School, part of the Air Force Institute of Technology, Air University, at Wright-Patterson AFB, Ohio. This report covers the development effort necessary for the education and training of the major command Implementation/Conversion (I/C) Teams.

2. APPROACH: Since many of the major commands desired more than one I/C Team, education had to be provided to approximately 130 personnel. Each team was composed of four functional specialists, one for each of the four major BEAMS subsystems: Real Property, Work Control, Labor Reporting and Cost Accounting. From the outset, it was apparent the educational requirements for the I/C Teams were threefold: (1) a basic knowledge of the BEAMS system, (2) detailed knowledge of the base-level tasks of implementing this system and (3) guidance on the function and operation of the I/C Teams. Since course materials for the regular BEAMS Course, for base-level personnel, were already under development, research and development for the I/C Team Course was concentrated on the latter two educational requirements. Early in the development two innovations were initiated and pursued. First, as a result of a limited number of instructor personnel at the Civil Engineering School, it was suggested that selected future members of major command I/C Teams be invited to assist in the development of I/C related course materials and present this information during the course offerings. It was felt that this early involvement would be beneficial to both their particular team and to the classes of I/C team members since a future I/C team member would be lecturing about tasks he himself would later be performing. The second innovation was to develop a package of materials that each team could use as a basis

for their future briefings to base personnel within their commands. Course development efforts began in mid-1968 and continued until the first offering for the I/C teams in November 1968.

3. RESULTS: The result of the above research and development effort was a two-week course of instruction including coverage of the B-3500 hardware system, BEAMS software, remote terminal transactions and inquiries, the BEAMS data bank, detailed discussions of each of the four major subsystems, organizing the I/C teams, role of the BEAMS base project officer, I/C tasks, use of the I/C briefing package, I/C problem coordination and I/C workload estimating. The course also included simulations of the data gathering, formatting and error correction I/C tasks and BEAMS file maintenance. Since the two offerings of this course were held at Andrews AFB where active remote terminal devices and the Air Force Systems Design Center (AFDSDC) were located, demonstrations of the remotes as well as question and answer sessions with AFDSDC personnel were also included. Based on the comments of the major command personnel attending the two I/C Team Course offerings, this research and development effort was successful in providing the basic knowledge required for the Implementation/Conversion Teams to accomplish their assigned responsibilities.

4. CONCLUSIONS: The concept of I/C teams is a very important one, since the team provides the necessary communication link between the command and the base for the successful completion of the I/C task. The I/C course likewise was of great importance as it had the job of providing the teams not only with an adequate education and preparation for their tasks, but also with positive motivation. The courses appeared to be very successful. In particular, the use of actual I/C team members as instructors contributed greatly to the course content. The idea arose initially out of the need for additional resources for instruction. But, having proved successful, it is recommended as an educational method and device even where ample time and instructors are available.

This summary was prepared by Melvin T. Snyder, Personnel & Training Requirements Branch, Training Research Division, Air Force Human Resources Laboratory.

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SECTION I

INTRODUCTION

BEAMS, the Base Engineer Automated Management System, is a set of automated procedures using the Burroughs B-3500 to assist the Air Force Base Civil Engineering organization in carrying out its mission. It is part of the Phase II Air Force Base Level Data Automation Standardization Program to standardize computer equipment, systems, and procedures at base and command levels throughout the Air Force.

According to Air Force Manual 85-200, (1) BEAMS does three major things: it 1) "applies the capabilities of the highly advanced B-3500 computer to Civil Engineering's current base level data automation program, " 2) "automates a variety of tasks formerly performed manually, " and, 3) "makes optimum use of the management by exception technique. "

Implementation/conversion (I/C) is the term given to the total effort required to collect and organize data for the creation of input card files to the B-3500 in order to produce the initial BEAMS data bank. Implementation takes place at a particular base on what is known as "D-day, " and the tasks to be performed prior to implementation are measured in days to D-day, for example, D-30. I/C is extremely important to the entire BEAMS project; indeed, if it is not performed properly, BEAMS cannot successfully operate.

Each major Air Force command has designated an I/C team. The members of the command I/C team have the responsibility of assisting the bases within their command with the implementation and conversion procedures for BEAMS. This responsibility includes a visit of approximately three days by the I/C team to a base 90 days before implementation (D-90). During this three day D-90 visit, the I/C team conducts a series of briefings on BEAMS and I/C procedures.

SECTION II

IMPLEMENTATION/CONVERSION COURSES

Two I/C courses, each of two-weeks duration, were jointly conducted by TCI and the Air Force at Andrews AFB during the periods 13-22 November and 2-13 December 1968. Two courses were needed because of the large number of course attendees: 60 BCE command level personnel attended the first session, and 73 attended the second. The names, grades, function codes, and organization and stations of the students are given in References 2 and 3.

The courses were conducted at Andrews AFB rather than at AFIT primarily because of the availability of remotes which were in operation at Andrews AFB and on-line to a B-3500 computer installed at Bolling AFB. The availability of this equipment allowed students to participate in actual BEAMS simulation. Another important reason for holding the I/C courses at Andrews AFB was the close proximity of the Air Force Data Systems Design Center (AFDSDC), which had the primary responsibility for the design of BEAMS and provided the I/C course attendees with the latest technical and conceptual information on BEAMS.

The two specialized BEAMS courses for the command I/C teams differed significantly from the regular BEAMS courses subsequently taught at AFIT. In effect, the I/C courses at Andrews AFB were more intensive, combining many parts of the regular BEAMS courses with much more detail on I/C. Although of the same duration as the AFIT courses--two weeks--they covered in great depth various aspects of I/C mentioned only briefly in the other BEAMS courses, while at the same time retaining most of the regular BEAMS material.

Course charts for the two-weeks sessions at Andrews were developed and updated several times. The final plan, dated 17 October 1968, is included as Appendix I.

SECTION III

COURSE MATERIALS

As mentioned previously, the I/C teams visit each base 90 days before implementation in order to conduct a series of briefings on BEAMS and I/C procedures. A D-90 Briefing Guide[4] was therefore developed as a suggested outline for these briefings. The development of the specific briefings to be conducted by each team, as well as the overall plan of operation for the team, remains the responsibility of the individual command.

The briefing guide, which includes recommended vu-graphs, assumes a particular schedule and defines four briefing sessions:

Day 1, 0830-0915	Session A
Day 1, 0930-1130	Session B
Day 1, 1300-1630	Session C
Days 2 and 3, 0830-1630	Session C (continued)

Session A is a general introduction to BEAMS and implementation/conversion; the Base Commander and other key personnel attend this session. Session B continues the overview of BEAMS, but also covers I/C tasks and the purpose of the D-90 visit. Session C, after certain introductory remarks, consists of a systematic review of each of the files that must be established, with detailed discussions of file format, data elements, the Data Element Source Table (DEST), edits, etc. This information is contained in Annex N of the Phase II Base Level Data Automation Standardization Plan, [5] and no outline or vu-graphs are provided in the Guide except for those relating to the introductory material.

Additional information for Sessions A, B, and C is contained in various chapters of AFM 85-200 and in the BEAMS Student Workbook[6] distributed during the BEAMS courses. The D-90 Briefing Guide is included as Appendix II of this report.

As part of the overall BEAMS contract, a simulation of BEAMS was developed to be used in courses at AFIT and at Andrews AFB. [7]

This simulation, designated Sim A, was designed to operate with that version of BEAMS developed prior to October 1968. This October version of BEAMS was available for use with Sim A, and parts of Sim A were used with it for education and training at both AFIT and STTC. The full set of BEAMS programs necessary for Sim A were not developed, however, and as a result, the I/C courses at Andrews AFB did not use the total simulation. Nevertheless, the students were able to use the remote to perform various exercises with the simulated data base. (8)

SECTION IV

HISTORY

BEAMS is a relatively new development. In fact, it began only five years ago. In 1964 the Directorate of Civil Engineering, HQ USAF, aware of the degree to which a data processing system could benefit Civil Engineering, authorized a Kelly AFB task force to design such a system. The work of the task force expanded to include two major command workshops and culminated in 1965 with the publication of a comprehensive set of specifications. From these initial efforts BEAMS evolved.

In May 1967 the I/C Plan for the Base Level Data Automation Standardization Program (Phase II) was completed. (9) It contains the policies, objectives, concepts, installation schedule, and other guidance necessary for orderly implementation of the Base Level Data Automation Standardization Plan (Phase II) Air Force wide. It was published prior to the selection of equipment to provide all organizations with a standard reference document as well as to give all echelons the opportunity of planning their actions in advance to assure that the various tasks would be completed on schedule. Because specific information on many items was not available at the time of initial publication, page changes were issued at later dates as additional information became available. (10)

The purpose of the plan was to provide for the orderly installation of standard electronic data processing equipment (EDPE) and the implementation/conversion of Air Force standard and approved command-unique data systems and associated files on the Phase II equipment at selected Air Force activities world wide.

The objectives of the program in mid-1967 were fourfold:

1) Effectiveness and responsiveness--to increase the effectiveness of base level data processing capability and responsiveness to base level management requirements.

2) Standardization and integration--to provide additional equipment, system, and program standardization and an integrated data processing capability.

3) Expansion--to provide for future redesign and/or expansion of current data systems and acceptance of new system requirements without the necessity of converting to new EDPE except where specifically justified and as approved by HQ USAF.

4) Cost effectiveness--to provide for the most economical and efficient method of satisfying approved management data system requirements of functional agencies.

Included in the program were the following concepts: 1) the acquisition, installation, and operation of a single type of electronic data processing system for the specific purpose of supporting the management requirements of Air Force bases and special activities where the mission or workload would justify a computer for this purpose; 2) modularity of EDPE to permit capacity increase or decrease or other modifications by on-site reconfiguration; 3) EDPE that might vary in configuration by base within commands but would be capable of effectively using standard object programs developed at centralized locations.

The successful implementation and operation of BEAMS depended greatly on how efficient the I/C teams were. These teams served a major function in carrying BEAMS information to the field, providing assistance, motivation, and hopefully a positive attitude. The I/C course that trained these teams had to include many things: 1) BEAMS itself--the same sort of information given to field personnel attending BEAMS classes; 2) information on the role of, and procedures for, I/C team members; 3) suggested organization and procedures for the I/C effort; and 4) sufficient motivation for the I/C teams themselves. The I/C course therefore combined all of the above with the regular, but condensed, BEAMS course.

The development of I/C course plans took place over a relatively short period of time. A conference was held at Wright-Patterson AFB from 13-15 August 1968 to review and finalize education and training requirements in support of BEAMS I/C Plan. (11) The plans up to this point were on the subjects to be taught, the time schedule, etc. But at this workshop a new idea evolved.

It was suggested that several members of the I/C teams themselves be invited to present information on certain aspects of I/C to the classes. Since the commands were interested in as much advance training as possible for the I/C teams, it was felt that participation as a speaker in an I/C class would help some members become involved early. Furthermore, since the I/C member would be lecturing about

tasks he himself would be performing, he would tend to look at it in an even more realistic and detailed manner. Finally, this would create additional instructional resources and ease the workload involved in development of the course.

Three men in particular were made available from major commands to assist in this effort. Captain Norbert A. O'Hare, a SAC team member, gave talks on estimating the I/C workload, keypunch problems, data gathering, and edit programs and error correction. Captain Jerry C. Pullium, from USAFE, spoke on various topics including organizing major command I/C teams, and the role of the BEAMS Project Officer. Mr. E. C. Evaniuk, an AFLC team member and an industrial engineer, gave several lectures concerning I/C teams and their function.

Course revisions went on throughout mid-1968 until November. The result was the course chart of Appendix I.

SECTION V

CONCLUSIONS

The concept of I/C teams is a very important one, since the team provides the necessary communication link between the command and the base for the successful completion of the I/C task. The I/C course likewise was of great importance as it had the job of providing the teams not only with an adequate education and preparation for their tasks, but also with positive motivation.

The courses appeared to be very successful. In particular, the use of instructors of actual I/C team members contributed greatly to the course content. The idea arose initially out of the need for additional resources for instruction. But, having proved successful, it is recommended as a pedagogical device even where ample time and instructors are available.

With respect to the D-90 Briefing Guide, it was recommended that more information could have been included in Section C on each of the files to be established, with detailed discussions of file format, data elements, the Data Element Source Table (DEST), edits, etc. However, this information is contained in Annex N of the Phase II Base Level Data Automation Standardization Plan, and additional information for the three sessions could be found in chapters of AFM 85-200 and in the BEAMS Student Workbook. Contract limitations prevented including this information in the D-90 Briefing Guide.

REFERENCES

(Because of the lack of formal identification and the limited distribution of some documents, TCI assigns a unique number to each document the company either generates or receives, for purposes of identification and retrieval. In the case of TCI publications, this number also serves as the document number; in the case of non-TCI documents, the number is included at the end of the entry.)

1. BEAMS, The Base Engineer Automated Management System, Air Force Manual 85-200 (Draft), Department of the Air Force, Washington, D. C., 1 August 1969.

2. BEAMS Course, Class 68-B, 13-22 November 1968, United States Air Force (SFN 1301).

3. BEAMS Course, Class 68-C, 2-12 December 1968, United States Air Force (SFN 1301).

4. BEAMS Implementation/Conversion D-90 Briefing Guide, Technical Communications, Inc., SFN 1292, 6 December 1968.

5. Phase II, Base Level Data Automation Standardization Program, Annex N, Department of the Air Force, 1 July 1969.

6. BEAMS, AFIT-CES Student Workbook (Draft), Technical Communications, Inc., SFN 1503, 25 October 1968.

7. BEAMS Education and Training SIM A Scenario, Technical Communications, Inc., SFN 2508, 31 August 1969.

8. BEAMS Education and Training SIM A Data Base, Technical Communications, Inc., SFN 2506, 15 August 1969.

9. Implementation/Conversion Plan for the Base Level Data Automation Standardization Program, Phase II, Department of the Air Force, May 1967 (SFN 1083).

10. Implementation/Conversion Plan for the Base Level Data Automation Standardization Program, Phase II, page changes, 1967-9 (SFN 1040).

11. Summary Report, CE MAJCOM BEAMS Education and Training Workshop, AFIT-Civil Engineering School, Wright-Patterson AFB, Ohio, 13-15 August 1968 (SFN 1056).

BEAMS COURSE
CIVIL ENGINEERING SCHOOL
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

APPENDIX I

I/C COURSE SCHEDULE

68-B - 13-26 November 1968
68-C - 2-13 December 1968

First Week

68-B	WEDNESDAY	THURSDAY	FRIDAY	MONDAY	TUESDAY
68-C	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
0800	Clear-in	B-3500	I/C Plans	Role of the BEAMS Project Officer	Forum
0900	Course Introduction	Computer Software	Organizing MAJCOM I/C Teams		Work Control
1000	Functions of Management	Data Bank	Real Property	Data Gathering	
1100		BEAMS Software		Edit Programs and Error Correction	
1300	Introduction to BEAMS	Transactions	Real Property Subsystem Remote Demonstration	D-90 Briefing	Work Control System Remote Demonstration
1400	AFM 85-200	Remote		I/C Training Package	

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68-B - 13-26 November 1968
68-C - 2-13 December 1968

68-B / 68-C	WEDNESDAY / MONDAY	THURSDAY / TUESDAY	FRIDAY / WEDNESDAY	MONDAY / THURSDAY	TUESDAY / FRIDAY
0800	Individual Work Orders	I/C Workload Estimate	Cost Accounting	Forum Turn in list of questions	Labor Distrib-ution Questions & Answers
0900		Keypunch Problems		I/C Progress Reporting Audit Resp & Proc	Cost Accounting Questions & Answers
1000	Material Control	AFDSDC I/C Team	PRIME/BEAMS Changes	Priority II Systems	Critique
1100		I/C Team Problem Coordination		Real Property Questions & Answers	Closing Comments GRADUATION
1300	IWO & Material Control Remote Demonstration	Labor Reporting	Functional Area Seminars	I/C Questions & Answers	
1400		CERP/BRASS	Develop list of un-answered questions concerning BEAMS subsystems or I/C	Work Control Questions & Answers	

APPENDIX II

BEAMS

IMPLEMENTATION/CONVERSION

D-90 BRIEFING GUIDE

Technical Communications, Inc.
10340 Santa Monica Boulevard
Los Angeles, California 90025

Prepared for BEAMS Education and Training Project under Contract No. F33615-68-C-1076, Project No. AM-7-64333/686F. Unit V, Item B011

6 December 1968

PREFACE

The Civil Engineering members of the Command Implementation/Conversion (I/C) team are responsible for assisting the bases within their command with the implementation and conversion procedures for BEAMS on the Phase II (Burroughs B-3500) computer. This responsibility includes a visit of approximately three days by the I/C team to a base 90 days before implementation (D-90).

During the three-day D-90 visit to each base, the I/C team will conduct a series of briefings on BEAMS and I/C procedures. This document is a suggested outline, including recommended vu-graphs, for these briefings; the development of the specific briefings to be conducted, as well as the overall Plan of Operations for the I/C team, is the responsibility of the individual commands. The suggested outline assumes a particular schedule and defines four briefing sessions:

Day 1, 0830 - 0915	Session A
Day 1, 0930 - 1130	Session B
Day 1, 1300 - 1630	Session C
Days 2 and 3, 0830-1630	Session C (Continued)

Session C, after certain introductory remarks, will consist of a systematic review of each of the files that must be established, with detailed discussions of file format, data elements, the Data Element Source Table (DEST), edits, etc. This information is contained in Chapter 13 of AFM 85-35, and, except for those relating to the introductory material, no outline or vu-graphs are provided here. Additional information for Sessions A, B, and C can be found in other chapters of AFM 85-35 and in the BEAMS

Student Workbook distributed at AFIT I/C and regular BEAMS courses.

It is assumed that the Base Commander and other key base personnel will attend Session A, a general introduction to BEAMS and implementation/conversion, and will depart at the end of that session. Similarly, the BCE and Civil Engineering management personnel who have an interest in BEAMS but are not directly involved with the I/C procedures (e.g., an engineer-manager) would attend Sessions A and B, and then depart after Session B. All other appropriate BCE personnel would attend all sessions.

IMPLEMENTATION/CONVERSION BRIEFING
SESSION A

A1

1. INTRODUCTION

a. BEAMS, the Base Engineer Automated Management System, part of overall Air Force Data Automation Program, is a set of automated procedures utilizing the Phase II computer--the Burroughs B-3500--to assist the Air Force Base Civil Engineering organization carry out its mission

BEAMS

BASE

ENGINEER

AUTOMATED

MANAGEMENT

SYSTEM

2. PLAN OF INSTRUCTION

a. Briefing divided into three sessions:

Day 1, 0830-0915: A - Overview
Day 1, 0930-1130: B - BEAMS
Day 1, 1300-1630: C - I/C
Days 2 and 3, 0830-1630: C - I/C (cont)

PLAN OF INSTRUCTION

SESSION	TOPIC
A	Overview
B	BEAMS
C	Implementation/ Conversion

3. SESSION A

a. Overview of BEAMS and I/C procedures

SESSION A

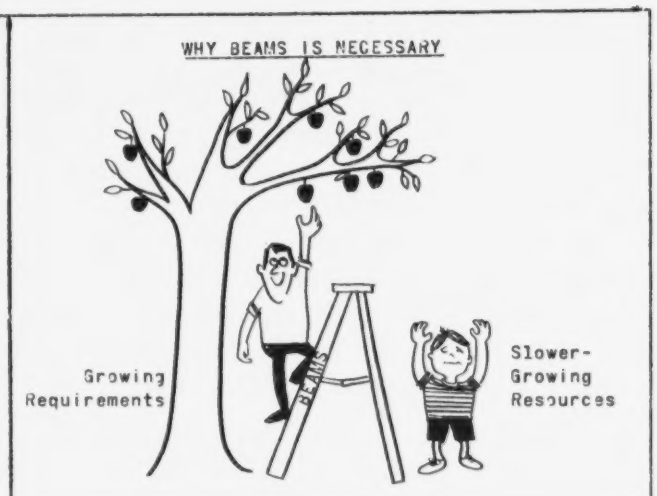
- BEAMS
- Implementation/ Conversion

4. WHY BEAMS IS NECESSARY

a. BCE must increase efficiency and decrease operating costs:

(1) Investment increasing
(2) Maintenance dollars increasing at a slower rate
(3) Personnel resources decreasing

b. BEAMS extends the reach of the BCE



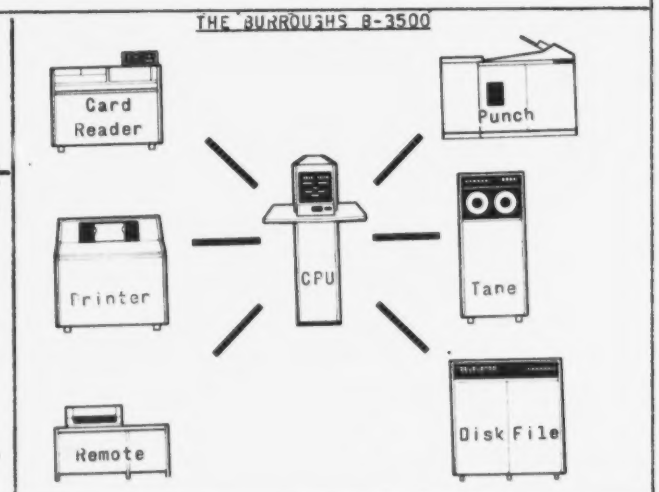
5. THE BURROUGHS B-3500 (1)

a. A collection of pieces of equipment

b. Card reader, card punch, printer, magnetic tape--all probably seen on other computers

c. Disk storage...stores the data bank... all data immediately available...known as Immediate Access Storage

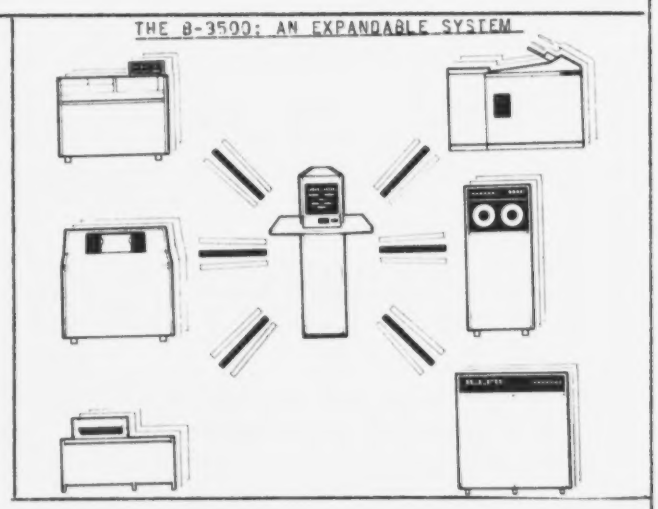
d. Remote Keyboard/Printer...for entering data and receiving replies to inquiries ...similar to a teletypewriter



6. THE BURROUGHS B-3500 (2)

a. "Third-generation solid-state"...faster, more powerful, more sophisticated

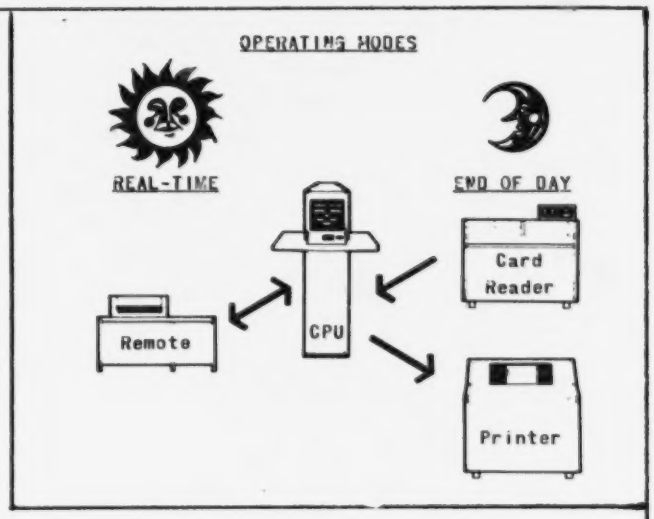
b. Compatible upward--that is, can expand the system...still have a B-3500... can add more disk storage or additional remotes...indeed, different bases will begin with different size systems



7. **OPERATING MODES**

a. Real-time... low volume input and output over the Remote K/P... immediate updating and immediate response to inquiries

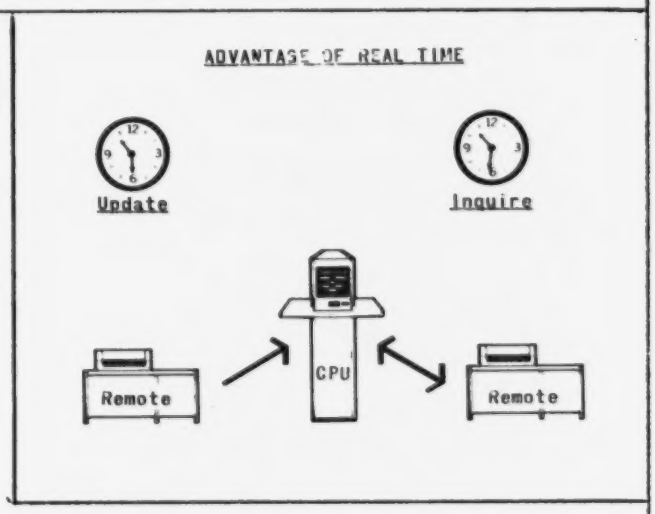
b. EOD, End of Day... high volume input using punched cards... high volume output using the computer printer... for example, regularly scheduled reports produced EOD, delivered the next morning



8. **ADVANTAGE OF REAL-TIME**

a. Data always current and immediately available... available as close as the nearest Remote K/P

b. Real-time or EOD, data current at least as of the close of business of the previous day... this includes, for example, year-to-date costs, which are entered as soon as incurred



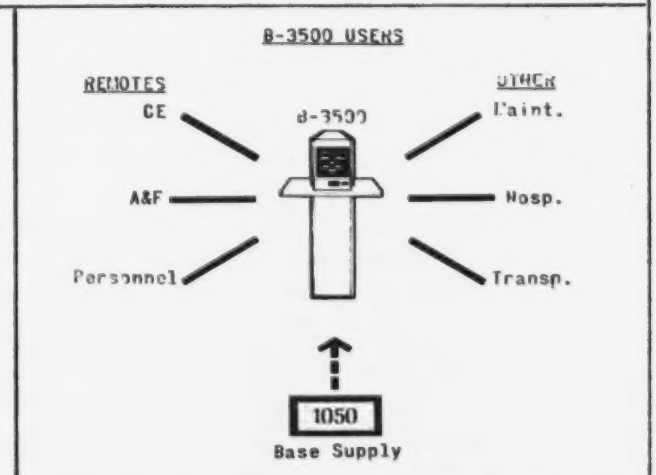
9. **BASE LEVEL B-3500 USERS**

a. Remote: CE, A&F, Personnel

b. Other: Maintenance, Hospital, Transportation, etc.

c. Base Supply: Keeps the Univac 1050, interfaces by means of punched cards

d. The various users of the B-3500 will all be using it simultaneously... known as time-sharing



10. BEAMS BENEFITS

a. Central data bank of BCE data

b. Accurate and current data

c. Immediate access to data bank

d. Automation of clerical tasks

e. Automated production of scheduled reports

f. Various special reports upon demand

g. Management by exception

BEAMS BENEFITS

Central Data Bank
Accurate and Current Data
Immediate Access
Clerical Task Automation
Scheduled Reports
Special Reports
Management by Exception

11. BEAMS SUBSYSTEMS

a. Now (Priority I):

Labor Reporting
Work Control
Cost Accounting
Real Property

b. Later (Priority II):

Family Housing
Workload Programming

BEAMS SUBSYSTEMS

NOW....

- Labor Reporting
- Work Control
- Cost Accounting
- Real Property

LATER..

- Family Housing
- Workload Programming

12. IMPLEMENTATION TASKS

a. Plan

b. Gather data

c. Enter on keypunch forms

d. Keypunch data cards

e. Load and edit

f. Error correction

IMPLEMENTATION TASKS

- Plan
- Gather Data
- Enter on Keypunch forms
- Keypunch data cards
- Load and Edit
- Error Correction

13. WORKLOAD

a. Gather data...23 files...at Langley AFB 58,000

b. Some data (e.g., cost accounting) already on cards (18,000 cards at Langley AFB)...other data must be entered into cards (e.g., equipment maintenance)

c. Keypunching at Langley, 40 man-days

d. Need for personnel, possible overtime, keypunch machines, etc.

KEYPUNCH WORKLOAD

Langley AFB

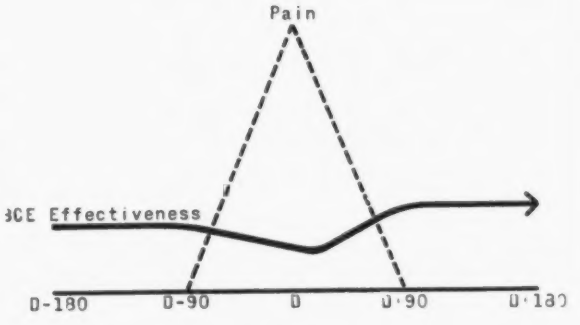
- 40,000 lines to complete on keypunch forms
- 40,000 cards to keypunch

14. IMPLEMENTATION SCHEDULE

a. D-90

b. D day

c. Management effectiveness will eventually go up...pain will eventually go down



15. BASE COORDINATION

a. Base Commanders

b. Data Services

c. Auditor

d. Base Supply

e. Motor Vehicle

f. Accounting & Finance

BASE COORDINATION

- Base Commanders
- Data Services
- Auditor
- Base Supply
- Motor Vehicle
- Accounting & Finance

16. ANY QUESTIONS?

1. PLAN OF INSTRUCTION

a. Primary purpose of I/C visit is I/C... some information on BEAMS itself helpful

b. Continue overview given in Session A... more details on BEAMS subsystems

c. Conclude with discussion of BCE I/C tasks... detailed discussion of I/C will be given in Session C

d. Opportunity for detailed information on BEAMS at courses to be given at AFIT-CES and STTC

SESSION B

- BEAMS
- BEAMS SUBSYSTEMS
- BCE I/C TASKS

2. BEAMS EDUCATION AND TRAINING

a. Management (officers and civilian equivalent)... two-week BEAMS course at AFIT-CES

b. Airmen and civilian specialists/technicians... four special courses at STTC:

Ind Eng Analyst	four weeks
Work Control	four weeks
Cost Acctng	three weeks
Real Property	three weeks

c. For those not attending courses... and for later... ECI BEAMS correspondence course

BEAMS EDUCATION AND TRAINING

- MANAGEMENT
- TECHNICIANS

3. AIR FORCE DATA AUTOMATION PROGRAM

a. Program divided into:
   (1) Phase I: Base Supply UNIVAC 1050
   (2) Phase I-1/2: Interim measure - base level - B-263, RCA-301, IBM 1401 and 1410
   (3) Phase II: B-3500 (base level)
   (4) Phase III: Command level - Honeywell 800/200

b. About 150 bases will receive B-3500; in addition, other smaller bases will be satellited to B-3500 at nearby larger base

AIR FORCE DATA AUTOMATION PROGRAM

• Phase I	Univac 1050
• Phase 1-1/2	B-263, RCA 301 IBM-1401 and 1410
• Phase II	B-3500
• Phase III	Honeywell 800/200

4. BEAMS DEVELOPMENT

a. 1964 - Kelly AFB Task Force authorized by Directorate of Civil Eng, HQ, USAF

b. 1965 - Command workshops

c. Dec 1967 - Selection of Burroughs B-3500

d. 1968 - Langley AFB, test base

e. 1969 - Lead base in each command, then other command bases

BEAMS DEVELOPMENT

• 1964	Kelly AFB Task Force
• 1965-1966	Worldwide CE Participation
• Dec 1967	Selection of B-3500
• 1968	Langley AFB
• 1969	Other bases

5. RESPONSIBILITY FOR BEAMS

a. AFOCE: Specifies requirements

b. AFDSDC (DRB): Develops and maintains computer systems

c. Command: Overall direction; provide I/C teams

d. AFB: At direction of parent command, operates the systems

e. BCE: Collects and communicates data

f. Base Data Automation: Furnishes processing support

RESPONSIBILITY FOR BEAMS

- AFOCE
- AFDSDC
- COMMAND
- BASE
- BCE
- DATA AUTOMATION

6. BEAMS DOCUMENTATION AND MODIFICATION

a. AFDSDC (DRB) issues and maintains AFM 85-35 and AFM 171-200

b. Changes accumulated and issued in blocks.

c. Data Automation will normally retain copies of AFM 171-200

BEAMS DOCUMENTATION

- AFM 85-35
- AFM 171-200

7. **BCE REMOTE**

a. Number of remotes assigned approximately as follows:

Number of BCE Personnel	Remotes
Less than 250	1
250-750	2
750-1100	3
1100-1500	4

b. Located in BCE operating area

c. Operated by BCE personnel

BCE REMOTE

BCE PERSONNEL	REMOTES
less than 250	1
250-750	2
750-1100	3
1100-1500	4

- LOCATION
- OPERATION

8. **BEAMS BENEFITS**

a. Review of benefits mentioned in Session A... each discussed in more detail

b. Features:

(1) Central Data Bank
(2) Accurate and Current Data
(3) Immediate Access
(4) Clerical Task Automation
(5) Scheduled Reports
(6) Special Reports
(7) ... and Management by Exception

BEAMS BENEFITS

Central Data Bank
Accurate and Current Data
Immediate Access
Clerical Task Automation
Scheduled Reports
Special Reports
Management by Exception

9. **CENTRAL DATA BANK OF BCE DATA**

a. Manual record-keeping greatly reduced

b. All BEAMS data stored in Disk File, e.g:

(1) Real property records
(2) Installed equipment records
(3) Current work orders and job orders
(4) Material due-in

CENTRAL DATA BANK OF BCE DATA

- Manual Record Keeping Greatly Reduced
- Files Automated and Stored in IAS

10. ACCURATE AND CURRENT DATA

a. Current at least as of the close of business on the previous day

b. Some data (e.g., contract cost) entered over remote during real-time and immediately available

c. Other data (e.g., labor costs) computed EOD, available the next morning

ACCURATE AND CURRENT DATA

- Some Immediately
- Other next morning

11. ACCURACY OF DATA

a. Accuracy an important consideration

b. Bad data in, then bad data out...but faster and more of it...also known as GIGO: Garbage In - Garbage Out

c. But, once in...continued accuracy...much higher than with punched card computers (such as B-263) because no manual handling

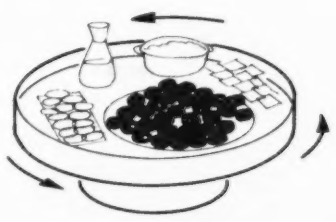
d. GIGO particularly relevant to I/C tasks

12. IMMEDIATE ACCESS TO DATA BANK

a. Data available in matter of seconds over the Remote K/P...even if other remotes also being used

b. Time-sharing like a spinning lazy-susan...each time it comes around you can grab another olive

"TIME-SHARING"



13. AUTOMATION OF MANY CLERICAL TASKS

a. The computer handles routine tasks... BCE personnel can apply their training, experience, and knowledge to more important tasks

b. Such functions as material control, equipment maintenance scheduling, and cost accounting essentially completely automated

AUTOMATION OF CLERICAL TASKS

- BCE Personnel Free from Routine Tasks
- Some Functions Completely Automated

14. AUTOMATED PRODUCTION OF STANDARD SCHEDULED REPORTS

a. Except for some reports that have been eliminated, all reports now automated will be received

b. In addition, many new reports will be produced

AUTOMATED SCHEDULED REPORTS

- CURRENTLY AUTOMATED
- NEWLY AUTOMATED

15. NUMBER OF REPORTS PREPARED MANUALLY REDUCED

a. Many reports now prepared manually automatically prepared by BEAMS. For example:

(1) Monthly Constr. in Progress Rpt.
(2) Monthly Real Prop. Control Ledger
(3) Quarterly Fac/Cost Acct. Ref. List
(4) Annual Land Change Report

...and many others

MANUALLY PREPARED REPORTS NOW AUTOMATED

- Monthly Construction in Progress
- Monthly Real Property Control Ledger
- Quarterly Facility/Cost Account Reference List
- Annual Land Change Report
- Others

16. SPECIAL REPORTS

a. Various special reports can be called for as required

b. In some cases information directly and immediately available over the Remote K/P . . . in other cases produced at EOD on computer printer and delivered next day

c. Scheduled and special reports <u>expand</u> the information available to BCE

EXPANDED AVAILABLE INFORMATION

- Equipment Maintenance Costs
- Vacant Area
- Facility Data
- Vehicle Downtime
- Work Progress
- BCE Costs

17. MANAGEMENT BY EXCEPTION

a. Management need not be informed of routine matters, but is kept aware of problem areas on which attention can be concentrated

b. Examples of Management by Exception in terms of scheduled reports:

(1) Weekly Unaccomplished Equipment Maintenance
(2) Daily Work Stoppage Report
(3) W/O varying ± 10% from Std - Monthly
(4) CERP Trend Analysis - Monthly
(5) C-128/172 Hi-Lo Cost Comparison - Annually
(6) RP Records - Overdue Update Notice Weekly

MANAGEMENT BY EXCEPTION

- Weekly Unaccomplished Eqmt Mtn
- Daily Work Stoppage
- Monthly W/O Variance
- Annual C/128/172 Hi-Lo Cost Comp.
- Weekly RP Records - Overdue Update Notice

18. FILE PROTECTION AND AUDIT TRAILS

a. A special file to record <u>every</u> transaction, and

b. A Daily Transaction Listing, and

c. Automatic periodic transfer of disk file onto magnetic tape; therefore,

d. Complete protection and data backup, and a complete audit trail

FILE PROTECTION AND AUDIT TRAILS

- THF File
- Daily Transaction Listing
- Complete Protection

19. **BEAMS SUBSYSTEMS**

a. Same slide as shown in Session A

b. Now (Priority I):

Labor Reporting
Work Control
Cost Accounting
Real Property

Later (Priority II):

Family Housing
Workload Programming

BEAMS SUBSYSTEMS

NOW....

- Labor Reporting
- Work Control
- Cost Accounting
- Real Property

LATER..

- Family Housing
- Workload Programming

20. **LABOR REPORTING - DUTY CODES**

a. The BCE assigns each employee a normal duty code and work center... that duty code and work center for which he will normally spend most of his hours

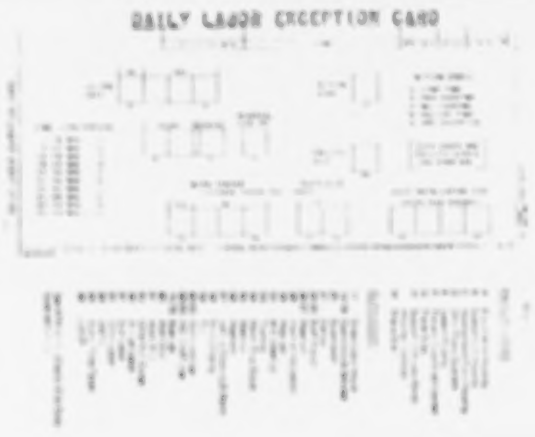
DUTY CODES

11	Direct Labor Hours
12-19	Operations and Services
20	Supervision
21	Clerical
52	Work Center Cleanup
53	Training
54	Maintenance Shop Equipment, etc.

21. **DAILY LABOR EXCEPTION REPORTING**

a. Employee reports his time only when he is working on other than his normal duty code, or other than his normal work center, or other than his normal hours (e.g. overtime)

b. BEAMS automatically computes actual hours by comparing normal hours and assignment contained in its memory for each employee with daily labor exception cards received each day



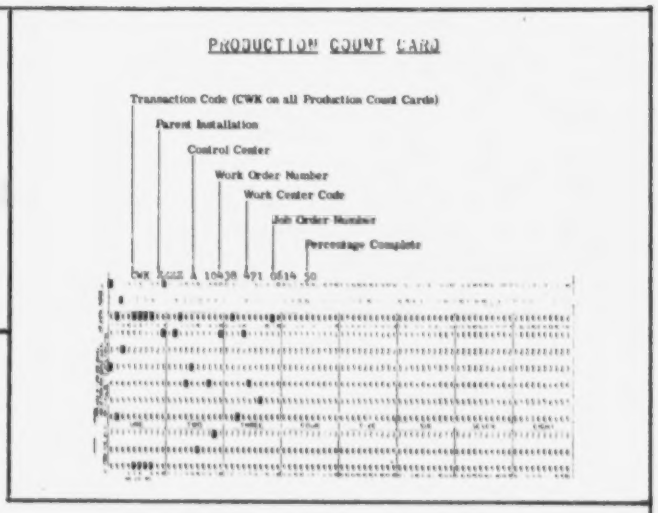
c. Computer provides prepunched cards; only small amount of data (e.g., exception duty code and number of hours worked) need be keypunched

22. PRODUCTION COUNT CARDS

a. As work is accomplished--for IWO, AWP JO, Service Call, or Equipment Maintenance--production count card is turned in

b. For small jobs or work orders, only one card turned in...for long jobs, cards turned in as certain percentages of job completed

c. Computer automatically furnishes prepunched cards



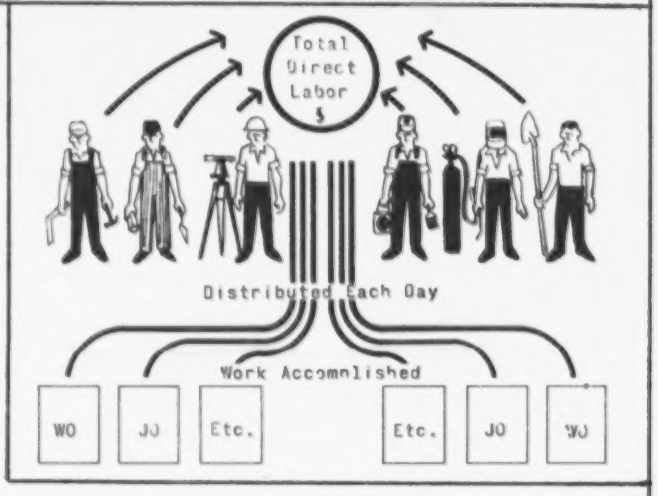
23. DIRECT LABOR COST DISTRIBUTION

a. Computer distributes total direct labor cost for work center among all work performed for that center

b. It doesn't matter who worked on a particular work order or job order

c. Distribution is proportional to standard hours for various work orders or job orders

d. Indirect labor costs go directly to appropriate cost accounts



24. LABOR REPORTING SUBSYSTEM

a. In addition to exception time accounting:

b. A master file of employee records and monthly BCE and Work Center Personnel lists

c. Accumulation of M/H data by work center, including available direct labor, AWP Job Order M/H, Scheduled Maintenance M/H, Service Call M/H, and Plant Operation M/H, to assist in annual work planning

d. Automated CERP and BRASS records and reporting

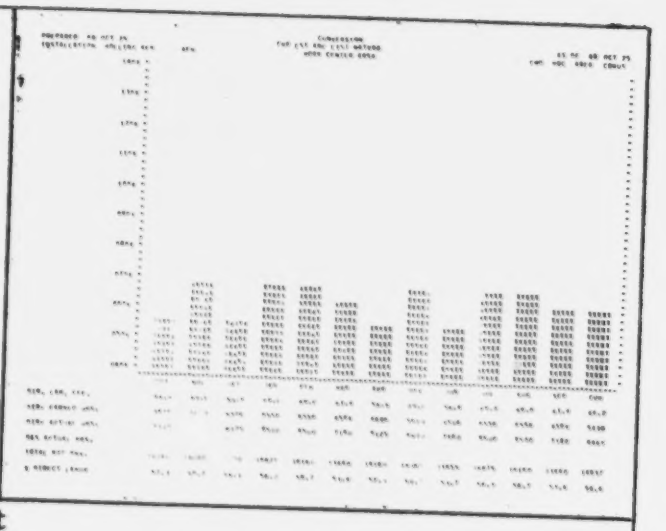
LABOR REPORTING SUBSYSTEM

- Exception Time Accounting
- Automated Employee Records and Reports
- M/H Data for Annual Work Planning
- CERP and BRASS Records and Reporting

25. CERP

a. Concepts:

(1) Measure labor performance of selected W/C
(2) Cover total labor force of W/C
- Direct labor
  - Measure W/O
  - Service Call
  - Operations and Services
- Indirect labor
  - Supervisory
  - Clerical
  - Maintenance of W/C equipment
  - Leave, etc.



b. Provides for: Daily CERP, on call of BCE and W/C labor trend analysis

26. WORK CONTROL SUBSYSTEM

a. Work order management. . . provides control over IWO's and AWP JO's

b. Facility costing. . . year-to-date maintenance costs by facility

c. Automated mobile equipment costing

d. Automated material control and costing

e. Automated equipment maintenance scheduling

WORK CONTROL SUBSYSTEM

- Work Order Management
- Facility Costing
- Mobile Equipment Costing
- Material Control and Costing
- Equipment Maintenance Schedule

27. INDIVIDUAL WORK ORDERS

a. Daily IWO Work Stoppage Report shows any IWO on which work has begun but no work reported in last three days

b. Daily Work Control IWO Purge List reports on completed IWO's requiring further action by Work Control (e.g., RPIE turn-in)

c. Daily Completed IWO Cost Report displays all costs for IWO's

INDIVIDUAL WORK ORDERS

- Daily IWO Work Stoppage Report
- Daily Work Control IWO Purge List
- Daily Completed IWO Cost Report
- Daily Cost Acct IWO Purge List

d. Daily Cost Accounting IWO Purge List reports on completed work orders awaiting action by Cost Accounting

28. INDIVIDUAL WORK ORDERS (Continued)

a. Weekly IWO Backlog Report gives status of all IWO's

b. Weekly Real Property Overage IWO Report reports on IWO's requiring capitalization action by Real Property

c. Finally, monthly IWO Variance Report shows percentage variance between standard and actual labor hours, labor costs, material costs, and total costs for those IWO's whose costs have varied by more than 10%

INDIVIDUAL WORK ORDERS

- Weekly IWO Backlog Report
- Weekly Real Property Overage IWO Notice
- Monthly IWO Variance Report

29. DIRECT LABOR ANALYSIS REPORTS

a. Monthly Direct Labor Analysis Report provides monthly and year-to-date labor hours for various types of work, including MC, Maintenance--IWO's, JO's, Service Calls--Repair, Emergency Repair, Operations and Services

b. Quarterly Workload Budget Data provides current quarter and year-to-date labor hours and costs--by civilian and military--and material costs--by BP and CP--for Service Calls, DIN calls, RPIE Maintenance, Job Orders and IWO's

FOR ALL DIRECT LABOR

- Monthly Direct Labor Analysis Report
- Quarterly Workload Budget Data

30. MATERIAL CONTROL AND COSTING

a. Punched cards from Base Supply Univac 1050 used as input to B-3500

b. All cards processed EOD each day, thus records updated daily

c. As material received, automatically expensed to WO, Cost Acctng, and facility files

d. Cost for bench stock automatically distributed, with feedback feature permitting periodic adjustment of ratio of bench stock to direct labor

e. Daily reports on material status; materials consumption history developed

MATERIAL CONTROL AND COSTING

- Data from Base Supply Computer
- Records Updated Daily
- Automated Expensing
- Automated Bench Stock Accounting
- Daily Status Reporting
- Materials Consumption History

31.	EQUIPMENT MAINTENANCE SCHEDULING a. BEAMS maintains record in data bank for each piece of installed equipment (RPIE or non-RPIE)...automatically prepares weekly report and production count cards for equipment to be maintained, and also reports on unaccomplished equipment maintenance	EQUIPMENT MAINTENANCE SCHEDULING • Completely Automated
32.	COST ACCOUNTING SUBSYSTEM a. Extends existing automation...labor, material, and mobile equipment costs completely automatic b. Contract, other, and non-BCE costs entered over the Remote c. Provides new information, such as installation costs and BCE costs for C-128/172 accounts d. Hi-Lo Cost comparisons	COST ACCOUNTING SUBSYSTEM • Extends existing automation • Provides new information
33.	COST DATA a. BEAMS provides some new cost data; in general, however, cost data provided by BEAMS essentially the same as those now theoretically available...but BEAMS provides data that are: • More accurate, because maintained in disk storage with summary data automatically in balance • More current...always at least as of close of business on previous day • More accessible...as close as nearest Remote	COST DATA • MORE ACCURATE • MORE CURRENT • MORE ACCESSIBLE

34. REAL PROPERTY SUBSYSTEM

a. Cost data are maintained in real property files rather than on AF Form 1440 series record cards

b. Voucher transactions--addition, projected addition, change or deletion--entered over Remote K/P...

c. Thereby automatically updating real property files, and...

d. Providing BCE personnel, as they might desire, with current and accurate data, including summary data, on facility costs and value

REAL PROPERTY SUBSYSTEM

- Automated maintenance of Real Property Records
- Voucher transactions entered over Remote K/P
- All files automatically updated
- All data immediately available

35. REAL PROPERTY SUBSYSTEM (Continued)

a. Several reports now prepared manually prepared automatically be BEAMS:

(1) Real Property Control Ledger
(2) Facility/Cost Acct Ref List
(3) Nonutilized Military Real Property Land Change Report

b. In addition, the information available to BCE is expanded--for example, vacant area by building, facility data by tenant.

AUTOMATION OF REPORTS PREVIOUSLY PREPARED MANUALLY

- Real Property Control Ledger
- Facility/Cost Account Reference List
- Nonutilized Military Real Property Land Change Report

36. IN SUMMARY

a. BEAMS is a set of automated procedures using the B-3500 computer to assist Base Civil Engineering in carrying out its mission

b. It is a great improvement over what we now have for numerous reasons, such as speed, accessibility of data, accuracy of data, etc.

c. Furthermore, it is not a static system, and additional improvements can be expected in the future

IN SUMMARY

BEAMS . . .

- Assists Base Civil Engineering
- Improves present system
- Promises further future benefits

37. SUMMARY (Continued)

a. Although the BCE will appoint a BEAMS Project Officer, certain actions will require his continued involvement, including:

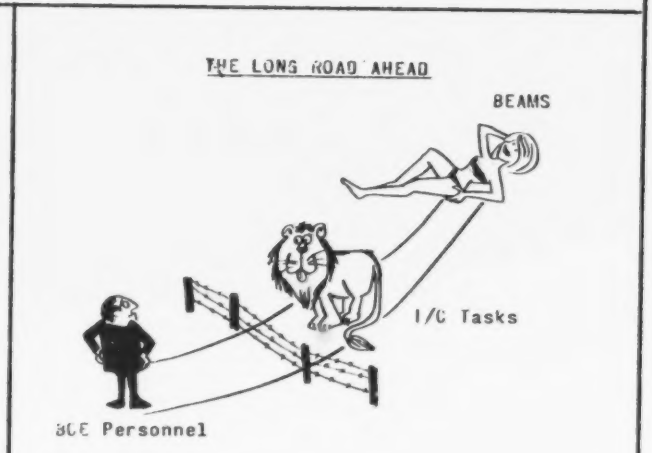
(1) Allocating personnel for data development
(2) Approving the schedule
(3) Anticipating and providing for key-punch workload
(4) Anticipating and providing for overtime
(5) Maintaining schedule for conversion

I/C ACTIONS BY THE BCE

- Appoint Project Officer
- Allocate personnel for data development
- Assign calendar dates to task list
- Anticipate and provide for key-punch workload
- Anticipate and provide for overtime
- Maintain schedule for Conversion

38. THE LONG ROAD AHEAD

We will, in Session C, discuss details of implementation/conversion. Much work must be done in the next 90 days. It will take cooperation from everyone, hard work from the Project Officer, and continuing active support from the Base Civil Engineer



39. ANY QUESTIONS?

1. INTRODUCTION

a. Implementation/Conversion consists primarily of the tasks associated with gathering and keypunching input data files in proper format for processing on to the B-3500 computer

b. Because of workload and resources available, individual AFB's may differ in the time necessary to complete the I/C tasks--on the average, a period of 90 days is allowed for this purpose

IMPLEMENTATION/
CONVERSION
I/C

2. TASKS TO BE ACCOMPLISHED

a. Obtain data for 23 files

b. Place data on keypunch forms

c. Keypunch data cards

d. Load and edit

e. Correct errors

TASKS TO BE ACCOMPLISHED

- Obtain Data
- Place on keypunch forms
- Keypunch cards
- Load and edit
- Correct errors

3. REQUIRED PUBLICATIONS

a. AFM 85-1

b. AFM 171-14 and 171-15

c. AFM 300-4...double check even familiar codes

d. AFM 85-35...of course!

REQUIRED PUBLICATIONS

- AFM 85-1
- AFM 171-14 and 181-15
- AFM 300-4
- AFM 85-35

4. FILES TO BE ESTABLISHED

a. Total of 23 files, separated into four subsystems:

(1)	Real Property	5
(2)	Labor	4
(3)	Cost Accounting	3
(4)	Work Control	11
		23

FILES TO BE ESTABLISHED

	Files
Real Property	5
Labor	4
Cost Accounting	3
Work Control	11
Total	23

5. AFM 85-35, CHAPTER 13

a. Complete details on tasks and how to accomplish them are given in AFM 85-35

b. Chronological list given for each load program in Chapter 13 of AFM 85-35 intended as guide for preconversion task schedule and as checklist for tasks accomplished

c. Actual loading follows specific sequence, beginning with the Installation Header (IHF) Load File, although in emergencies some variations may be permitted.

AFM 85-35

CHAPTER 13!

6. CONVERSION LOAD PROGRAM

a. Each file is loaded on to the B-3500 by means of a "Conversion Load Program"

b. Data Automation will operate these programs... responsibility of Base Civil Engineering to prepare input (punched cards)

CONVERSION LOAD PROGRAM

- Data Automation operates
- BCE prepares input

7. CONVERSION LOAD PROGRAM (Cont.)

a. Basic items required to collect data for each file, and create and format these data into BEAMS data bank, are the following:

(1) Data Element Source Table (DEST)
(2) Load Input Card Format
(3) Edit Table
(4) Error List
(5) Preconversion Tasks and Special Instructions

b. These items are discussed in AFM 85-35 for each file

AFM 85-35

DEST

Card Format

Edit Table

Error List

Other Topics

8. DATA COLLECTION

a. Data gathering first and foremost I/C task

b. Almost insurmountable-seeming job made simpler by data gathering and formating tools available

c. Accuracy a most important consideration; cannot be overstressed

DATA COLLECTION

- First and foremost I/C task
- Data-gathering tools simplify difficult job
- Accuracy important

9. DATA COLLECTION TOOLS

a. Three tools:
(1) Data Element Source Table (DEST)
(2) Load Input Card Format
(3) AFM 300-4 Index to Data Elements and Codes Used by CE Activities

b. These tell:
(1) What data elements are needed to create the files
(2) Where to find them
(3) Where to place the information

DATA COLLECTION

- DEST
- Load Input Card Format
- AFM 300-4 Index to Data Elements and Codes

10.	DATA ELEMENT SOURCE TABLE a. Cross-reference table established for each file b. Contains all data elements constituting that file c. Indicates source(s) for each data element	DEST • Established for each file • All data elements for file • Source(s) for each data element
11.	LOAD INPUT CARD FORMAT a. Lists data elements required to create file... b. Identifies which columns data values go in... c. Contains any extra special instructions ...therefore... d. Primary source for formating data element values for each file	LOAD INPUT CARD FORMAT • Lists required data elements • Tells where to put data values
12.	AFM 300-4 INDEX TO DATA ELEMENTS AND CODES USED BY CE ACTIVITIES a. Shows where in 10 volumes of AF 300-4 to find data elements and values used by CE activities	AFM 300-4 INDEX TO DATA ELEMENTS AND CODES USED BY CE ACTIVITIES

13. CREATION SHEETS

a. Once information is gathered, must be placed on form or document that will be kept as permanent record of file creation and from which data can be punched onto load input cards...

CREATION SHEETS

- AF Form 1530
- Load Input Data Worksheet
- Preprinted Worklists

14. AF FORM 1530

a. Normally this would be the AF Form 1530, Punch Card Transcript...

AF FORM 1530

15. LOAD INPUT DATA WORKSHEET

a. However, with data being collected from many different sources, use of a worksheet might be advisable

b. Worksheet format lends itself particularly well to processes of collecting, formating, and keypunching data

LOAD INPUT DATA SHEETS

- Simplifies data collection, formating, and keypunching

16. PREPRINTED WORKLISTS

a. Particularly convenient

b. Available only for certain files, however

PREPRINTED WORKLISTS

- Convenient
- Available only for some files

17. PRECONVERSION EDIT

a. Developed by Data Automation to save man-hours otherwise spent in manual file editing

b. Uses computers presently at base

c. Objective, rather than subjective, edit

d. File cleaning tool: vacuum cleaner that replaces broom

PRECONVERSION EDIT

- Utilizes computers presently at base
- File cleaning tool

18. EDIT PROCEDURE

a. BCE personnel submit completed load input cards to Data Automation

b. Data Automation sorts and runs pre-edit to generate error listing

c. Card deck and error listing returned to BCE for correction

d. If necessary, corrected deck back to Data Automation for another pre-edit run

e. Cycle continues until clean deck obtained

EDIT PROCEDURE

- BCE submits cards
- Data Automation sorts cards and generates error list
- Cards returned for correction
- BCE corrects and returns to Data Automation
- . . . and so forth

19. **PRE-EDIT ERROR LISTING**

a. Asterisks mark errors; printed below each value needing correction

b. Error message indicated type of error

c. No error message if card contains more than one error

PRE-EDIT ERROR LISTING

20. **CORRECTING ERRORS**

a. Three methods available:

(1) Strike out error and mark correct data above in red

(2) Prepare Form 1930 line entry with corrected data for each card in error; new cards then punched

(3) Punch new cards directly from corrected error list (used only when trained, professional key-punch operators available)

CORRECTING ERRORS

- Mark Card
- New 1930
- Keypunch directly

21. **GANG PUNCH AND SPECIAL PROGRAM**

a. What happens if 90% of cards contain at least one error...for example, every character on each card transposed one column

b. Two options:

(1) Data Automation writes program to reposition data and mass-correct deck

(2) Gang punch entire new deck

SPECIAL ERROR CORRECTING PROCEDURES

- Special Program
- Gang Punch

c. Either way, whole deck must be repunched, perhaps card by card

22. **ESTIMATING ERROR CORRECTION**

a. Difficult to determine error correction workload

b. Langley AFB experienced 10 to 20% error correction workload; may or may not be representative

c. Depends on:

(1) Difficulty involved in correcting data
(2) Volume of cards in file
(3) Keypunch capability
(4) Data Automation support

ESTIMATING ERROR CORRECTION WORKLOAD

. . . it depends

d. Error correction may have significant impact on file creation workload

23. **KEYPUNCHING DATA CARDS**

a. Where the operators will come from:

(1) BCE personnel
(2) Overtime
(3) Operator augmentation from other BCE or base agencies/areas
(4) Contracting keypunch workload

GETTING THE CARDS KEYPUNCHED

- BCE personnel
- Overtime
- Other BCE or base agencies/areas
- Contract

24. **EDITING**

a. To decrease keypunch workload and increase accuracy, conversion programs accept data fields left-justified

EDITING

- Data fields left-justified

25. INTERNAL EDITS

a. Internal edits result in rejection of cards with incompatible data

b. Error list produced as a result of internal edits

INTERNAL EDITS

- Rejection of cards with errors
- Production of error list

26. LOAD PROGRAMS ERROR LIST

a. Generally 80/80 listing

b. Error messages list specific error

c. Each load program has specific correction procedures

LOAD PROGRAMS ERROR LIST

- 80/80 listing
- Specific errors listed
- Specific correction procedures

27. ANY QUESTIONS?

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13. ABSTRACT

This report describes the nature, purpose and method of development of the Base Engineer Automated Management System (BEAMS) Implementation/ Conversion (I/C) Team Education Course. It includes a short discussion of the content, history and development of BEAMS from its inception in 1964 to its initial test at Langley AFB in 1968. Implementation/Conversion is defined and described in terms of the responsibilities of major air commands and bases for the creation of the initial BEAMS data bank. The concept of the I/C teams is examined and the necessity for successful Implementation/ Conversion is related to the success of the entire BEAMS program. I/C course content is contrasted with that of the regular BEAMS courses which were subsequently taught at AFIT, with special emphasis on the structure of course materials and teaching objectives.

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